

REPORT ON INSPECTION
OF
CABOT CORPORATION'S
WATER POLLUTION CONTROL PROGRAM

Tuscola, Illinois

INTRODUCTION

On November 21, 1974, the writer conducted an annual survey of the subject industry's water pollution control program. Mr. R. B. (Jack) Roaper, Chief Engineer, was interviewed during the visit.

There are currently five permits (four State and one Federal) in effect at this facility. These are as follows:

- (1) Permit #1974-EB-1644-OP dated October 21, 1974, and expiring October 21, 1975, covers their industrial waste disposal well operation.
- (2) Permit #1974-EA-1595-ROP dated October 23, 1974, and expiring October 23, 1976, covers their wastewater discharge to Drainage District #4 which consists of rainwater runoff, pump seal water, and field drainage.
- (3) Permit #1973-EA-506-OP dated March 28, 1973, and expiring March 28, 1975, covers the operation of their septic tank-seepage field for employees' domestic waste.
- (4) Permit #1974-FA-1062 dated July 1, 1974, allows the construction of an extended aeration package plant with tertiary filtration and chlorination. This will replace the septic tank-seepage field system. The permit expires one year from the date of startup.
- (5) NPDES Permit No. IL0004367 became effective October 26, 1974, and expires December 31, 1978. It covers the total of the aforementioned State permits.

Each of the aforementioned will be covered in the following sections.



INDUSTRIAL WASTE DISPOSAL WELL

Ther permit allows the injection of a maximum of 300 gpm at a maximum injection pressure of 50 psig. The wastes consist of hydrochloric acid, chloridic salts, and silicon dioxide particulates from Cabot Corporation; and, nitric acid, zinc nitrate, trisodium phosphate, and aromatic solvent from R.R. Donnelley Company (averaging 30 tons per month).

A description of the surface facilities associated with the operation of the deep well is set forth in a previous report by the writer dated December 16, 1971, and will not be repeated here.

Mr. Roaper reported that the new bulk production facility was nearly complete and this would increase the volume of wastewater to the well about 50% from an average of 70 gpm to an estimated average of 105 gpm which is still within the permitted maximum of 300 gpm.

Operational reports are routinely submitted and contain data specified in the permit. A summary for the first nine months of 1974 is presented below:

<u>Month</u> <u>(1974)</u>	<u>Volume</u> <u>Injected</u> <u>(MGD)</u>	<u>pH</u>	<u>Cl</u> <u>(mg/l)</u>	<u>%HCl</u>	<u>TSS</u> <u>(mg/l)</u>	<u>RRD*</u>
Jan	0.144	0.40	18,700	1.61	558	22.12
Feb	Missing	from	file		
Mar	Missing	from	file		
Apr	0.125	0.34	26,840	2.03	2472	43.80
May	0.139	0.36	23,000	1.91	1435	41.71
June	0.130	0.26	21,750	2.02	9613	40.79
July	0.101	0.38	18,400	1.70	1026	61.11
Aug	0.102	0.54	14,875	1.31	596	21.81
Sept	<u>0.090</u>	<u>0.39</u>	<u>34,250</u>	<u>1.84</u>	<u>1018</u>	<u>43.19</u>
Totals	0.831		157,900	12.42	16,718	274.53
Averages	0.119	-----	22,557	1.77	2388	39.22

*Tons per month of R.R. Donnelley waste

Roaper indicated the well was overhauled in April and again in October as part of their routine maintenance program. He also noted that a second well had been proposed but the first submission for a permit had been denied in a November 7, 1974, letter from the Permit Section requesting additional information which Cabot is currently working on.

Overall, the operation of the deep well appeared to be causing no problems with respect to surface waters of the State of Illinois.

WASTEWATER DISCHARGE

The wastewater discharge to Drainage District No. 4 is routinely sampled by Agency personnel on a monthly basis. A summary of those results is attached. In dry weather, this consists mainly of Nash seal water. The discharge is subject to Rule 408 and a 15 mg/l suspended solids level is required. Normally, this poses no problems. However, with the construction underway on the plant expansion, some recent problems have been experienced. The Nash pumps are vacuum pumps which utilize water to pull a vacuum through a receiver tank from the processes. The receiver tank is equipped with a filter to catch any of the product lost during the processing. But, the expansion has required moving the receiving tanks from one building to another and they have had to be out of service allowing any lost product to enter the seal water directly rather than being trapped on the filters. Roaper anticipates the move will be completed during the month of December.

A vacuum sweep system utilized for picking up product spilled on floors had also been out of service and floor drains in the area where it was used were tributary to the Nash seal water line also. This system was to be back in operation on the day of my visit.

They were aware that some suspended solids were leaving with the seal water under these conditions and to minimize the effects a septic tank hauler was periodically being called in to pump out accumulated solids in the junction box just outside their property line where the Nash seal water combines with additional drainage from Drainage District No. 4. Some of the solids were settling out at this point. A sample on November 21 revealed 120 mg/l suspended solids in the discharge at their property line and was causing a light milky turbidity. The surface of the water was also covered with a light oil film which Roaper indicated was from surface runoff from oil left on the ground where the deep well had recently been pulled for maintenance. He did not feel there was a significant enough quantity to warrant cleanup and I agreed.

At the outlet of Drainage District No. 4, the same light milky-like turbidity was observed. However, there were only minimal bottom deposits on the stream bed indicating the problem had not existed very long. This outlet forms the headwaters of an unnamed tributary of the Scattering Fork of the Embarrass River. The tributary enters the Scattering Fork approximately one and one-half miles below the outlet of Drainage District No. 4. The unnatural turbidity had dissipated at this point.

On November 25, I resurveyed this portion of the tributary and found no unnatural turbidity. Only a small amount of white bottom deposits were noted in the immediate area of the outlet. Roaper informed the periodic problem of product losses would probably continue a few more days. As this was only a temporary condition and not a continuous discharge, I did not feel the situation warranted any further action. I did indicate that we would keep an eye on the creek and that they should make every effort possible to quickly complete the construction and minimize the lost product. The only apparent effect on the receiving stream was the unnatural turbidity.

Following completion of the construction, the writer anticipates no problems from this discharge as it should easily comply with Rule 408 and the NPDES limitations placed on it (15 mg/l total suspended solids and 750 mg/l net total dissolved solids).

Cabot routinely monitors the discharge from the junction box just outside their property line for chlorides, total solids, suspended solids, dissolved solids, and pH. The same parameters are monitored at the outlet of Drainage District No. 4. A V-notch weir also is available for flow measurement. Monthly reports are submitted to the Agency. However, the data is not representative of the Nash seal water alone as storm water drainage and additional field tile drainage from Drainage District No. 4 is also present at their sampling point. Therefore, their operational reports were not summarized in this report as no conclusive results could be obtained. Their sampling location is being changed to correct for this.

DOMESTIC WASTEWATER TREATMENT

Domestic waste is currently handled by a septic tank-seepage field. However, construction on a new system consisting of an extended aeration package plant with a surge tank, an aerobic digester, a tertiary filter, chlorine contact tank, and a hypochlorinator is nearly complete. The contractor is scheduled to turn the plant over to Cabot on December 2 and they hope to start it up the week of December 16. It is designed to

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serve a P.E. of 75 with a DAF of 7500 gpd, i.e., a Group D plant. Mr. Fred Ross, Laboratory and Quality Assurance Manager, will be the responsible operator. He has completed a sewage treatment course at Lakeland College in the fall of 1973; and, once he obtains six months of operating experience, he will be eligible for the Class IV exam which is the required level for this plant.

The writer left with Mr. Ross a pad of extended aeration operation reports, operator certification regulations, an application for the certification exam, and our manual of laboratory methods. It was indicated that once the plant was operable, a return visit would be made to inventory the facilities and assist Mr. Ross with its operation and the laboratory testing.

The new effluent will discharge to Drainage District No. 4 with the Nash seal water.

NPDES REQUIREMENTS

Beginning January 1, 1975, they are faced with the following effluent limitations:

Nash Seal Water:	TSS = 15 mg/l
	TDS = 750 mg/l Net
Treatment Plant:	TSS = 5 mg/l
	BOD ₅ - 4 mg/l
	F. Coli = 200/100 ml

Monitoring is required on a weekly frequency.

Mr. Roaper indicated that they are hopeful of obtaining a Pfeffer exception to allow a 10/12 (BOD/TSS) from the treatment plant. The first submittal was made in a September 6, 1974, letter; and, an Agency letter of September 19 requested additional information. This is being handled by the corporate office in Texas and Roaper was not sure of the present status.

The NPDES permit also sets forth a schedule for evaluating the deep well disposal system and requires submission of monitoring reports on its operation.

CONCLUSIONS AND RECOMMENDATIONS

Based on the herein reported inspection, it is concluded that Cabot Corporation has an active and ongoing water pollution control program. They appear very informed of the existing regulations and are making a sincere effort to comply with them.

The following recommendations will be set forth in the attached letter:

- (1) Comply with the provisions of the NPDES permit.
- (2) Establish representative sampling points for the treatment plant effluent and the Nash seal water. These points should be prior to mixing with storm water drainage and prior to entry into the property line box.
- (3) Provide a properly certified operator for the sewage treatment plant.
- (4) Submit the required monthly operating reports once the sewage treatment plant begins operation.

Routine surveillance of the subject industry will continue.

G.T. Bachman
G. T. Bachman, EPE
Region III-C, DWPC/FOS

GTB:bh
12/23/74

cc: - K. L. Baumann, Region III-C

CABOT CORPORATION - AGENCY GRAB SAMPLES
Seal Water Discharge @ Tuscola

DATE	PH	TSS* (mg/l)	BOD (mg/l)	COD (mg/l)	Cl (mg/l)	TDS (mg/l)	VSS (mg/l)
1/17/74	7.4	18	—	4	370	1020	5
4/19/74	8.2	10	—	8	220	620	—
5/23/74	7.2	11	2	4	230	860	5
6/20/74	6.9	21	—	8	255	890	9
7/16/74	8.4	3	—	4	120	450	3
8/22/74	8.2	5	—	16	113	500	—
9/20/74	6.5	80	—	—	1360	—	—
11/21/74	7.3	120	19	20	300	957	—
11/25/74	7.2	19	3	—	—	1283	—
TOTAL		287	24	64	2968	6580	22
AVG.		32	8	9	371	822	5

* Discarding samples during construction period, TSS average is 11 mg/l.